



SWARC NEWS

Notes from K7RLH

Welcome to the November 2021 newsletter. I will continue to send out emails with current news, as needed, rather than only touching base once a month via this document.

I hope you all enjoyed the Thanksgiving holiday meal that was shared by the 17 attendees. We had plenty of delicious food and the holiday spirit was evident.

We continue to offer CenCar VE Team testing on the first Saturday of each month and our success rate has been outstanding due in part to our participating VEs and adequate preparation by the examinees. This VE team, sponsored by Laurel VEC and sanctioned by AL Post 116 and the club, offers free exams at all times.

I continue to encourage you to renew your club membership if you have not already done so. In addition, if you are an ARRL member, I thank you. If not, I encourage you to join as our club is required to maintain 51% ARRL membership to be an affiliated club and there's lots of useful info on their website that has 'members only' access. ARRL is our voice to the FCC and other government agencies regarding protection of frequency spectrums that we hams like to use.

Look for other info in the body of the newsletter. Happy Thanksgiving!
SWARC de K7RLH

Notes from KB4NC

Hello fellow SWARC members,

I heard the Thanksgiving Celebration was successful and people enjoyed themselves. I wish I could have been there, but I wasn't up for traveling after my surgery. For the next meeting, we will be having our Christmas Holiday Party. The SignUp Genius was emailed this week so that people can let us know who are coming and what they will bring with them to share with others.

Wishing everyone a very Happy Thanksgiving!

73,
Manny KB4NC

SWARC 3 November 2021 Meeting Minutes

The meeting was called to order at 6:15 pm by President Richard Hall, K7RLH. This was our Thanksgiving holiday meal meeting so it started early. Our normal meeting times are at 7pm on the first Wednesday of every month in Building 2 on the Legion complex. Richard led us in the Pledge of Allegiance and meal blessing.

We had good attendance with 17 persons present. Attendees included: Richard Hall (K7RLH), Bill Blomgren (KK4QDZ), Andy McDaniel (KN4JJU), Al Crawford (WA4TCJ), Steve Mowels (KA0GMY) and his lovely wife Miss Gloria, Mike Gaither (K4MWG), Gary Plante (KO4LQX), Christy Fernandini (KJ4AEO), Steve Susanne (WB4SMS), Brian Knox (KK4BK), Dave Yow (K4MSE), Richard Akelewicz (K4END), Dave Krum (NW3U) and his better half Penny, Joe (visitor) and his son Mark.

Financial Report:

Christy provided a financial report to the members noting that the club has \$1,777.70 in the bank as of November 3rd. The club's balance reflects the \$820 donation to Danny Hampton last month to support maintenance of his repeaters. The annual donation was calculated based on 82 members to date times \$10 per member. The club also donated \$100 last month to the Legion in support of a youth function at their annual BBQ.

New Business:

The NC QSO Party is set for February 27, 2022 from 10am – 8pm EST. For the past NC QSO Party, the club sponsored the In State Low Power Phone award. Brian asked the attendees if the club was interested in sponsoring the award again at the \$50 level. The motion passed unanimously.

Raffle ticket sales continue to go well. As a reminder the raffle prizes include a NanoVNA antenna analyzer donated by Steve Rhudy (KY4SLR), a Yaesu FTM 7250D 2m/440 radio donated by Gator (K4MWG), and the 2021 ARRL Handbook donated by Brian (KK4BK). The club is interested in selling raffle tickets at the upcoming JARSfest. The 32nd Annual JARSfest will be held November 21st 2021, at the American Legion Building, in Benson, NC. To sell tickets at JARSfest the club would need to buy a table for \$15. A motion was made to purchase a table spot at JARSfest which passed unanimously. Gary indicated he was interested in manning the table. Additional volunteers to join Gary are welcome and encouraged! Penny suggested that the club consider printing up business cards or fliers to pass out at JARSfest and future gatherings of ham radio enthusiast as a marketing tool for the club.

Richard reminded the attendees that the Central Carolina VE Team offers monthly exam sessions. Exams are typically given on the first Saturday of each month, with some exceptions for holidays, at 10:00 am at American Legion Post 116, Bldg 2, 6400 Johnson Pond Rd., Fuquay-Varina, NC 27526. Examinees are encouraged to register ahead of time, but walk-ins are accepted provided that you have a valid email address and either have a FRN number from the FCC or a ham radio license. It is suggested that you bring a copy of your current license if applicable.

Dave Krum announced that Jeremy Lindsley (K2HJX), the Ham Public Service

Coordinator for RARS, is interested in re-establishing the Ham Public Service of NC brand and setting up an associated website, advertising and coordinating public service opportunities. Presently public service opportunities in our area are coordinated through the RARS website. Jeremy is interested in setting up a coordination platform that is not affiliated with a specific club with the goal of broadening participation in public service across our area. Jeremy is also interested in putting together a Go-Box which public service participants could check out and use for events. Dave asked the attendees to think about whether SWARC would be interested in participating in Ham Public Service of NC and help sponsor the Go-Box. The club may take up this matter at a future meeting.

Main Presentation:

Delicious food! Tonight was the annual Thanksgiving club meal and attendees brought in a wide variety of delicious pot luck plates enjoyed by all.

Richard concluded the meeting at 7:15 pm.

73

Andy McDaniel – KN4JJU - Secretary

MEMBERSHIP

Just a reminder that it is that time again to pay membership dues.

\$30 for individuals and \$5 for each family member. These are not pro-rated unless an individual, as a previous member, is renewing midstream, etc.

You can bring a check or cash to the next meeting or mail them to the club PO box and Christy will let me know she has received them so I can update the list. If you mail them, give me a heads up so I can mark it as pending on the roster.

Makes checks payable to South Wake ARC.

If you are going to mail it, send it to South Wake ARC – PO Box 1565 – Fuquay Varina, NC 27526

I will be developing an online form so new members can fill out the application online and mail or bring a check to a meeting.

I will be reaching out to all members here soon to make sure I have the latest contact information, addresses, etc so I can make sure the membership list reflects current information.

Thanks,

Gary Plante

KO4LQX

NET REPORT

SWARC Group-October 2021

We had three individuals who can be referred to as net check in champs; they are Bill, KK4QDZ, Al, WA3JJG, and Al, WA4TCJ.

Look at those counts! Notice that we are only showing folks who have checked in more than once? Why did we do that?! Because there were 22 recorded check-ins that came just once.

See you on the net.

net date	Callsign count	Expr1000	Net Checkins
10/2/2021	21	WA3JJG	19
10/3/2021	15	KK4QDZ	18
10/4/2021	13	WA4TCJ	16
10/5/2021	17	K7RLH	15
10/9/2021	18	KJ4QNW	13
10/10/2021	7	KO4SAV	13
10/11/2021	12	KO4LQX	12
10/13/2021	14	N4BAJ	12
10/14/2021	11	N4MRW	10
10/16/2021	28	KO4FUD	9
10/17/2021	15	N4NCK	9

10/20/2021	17	KM4IJK	7
10/23/2021	14	WB4UFO	7
10/24/2021	12	KT4JR	6
10/25/2021	11	KD2DMK	6
10/27/2021	14	KB4NC	6
10/30/2021	19	KB4NC	6
10/31/2021	14	KJ4CVK	6
		KJ4WLG	5
		KI4WAI	5
		KG4JOK	5
KN4RJJ	2	KK4BK	4
KO4LZZ	2	KN4OEY	3
N4SBB	2	KO4DHJ	3
K4RDR	2	KI4YII	3
KM4ARS	2	KE4RUN	3
W1JCA	2	KO4TTC	3
KM4USJ	2	N4SMB	3
KA0GMY	2	KD7AAG	3
N4BNC	2	KO4MSN	3

While we are on the topic of nets, here is the plan for Net Controls while Kenny is recuperating from his first (and soon to be second) surgery.

- For the time being, until further notice, Kenny, KJ4CVK, has resumed the noontime nets
- Saturday and Sunday evenings will be called by KT4JR & K7RLH
- KB4NC will call Monday evenings
- KA0GMY will call Tuesday evenings (backup is K7RLH)
- KK4BK will call Wednesday evenings for the time being
- KJ4CVK to pick up Thursday evenings if available (KO4LZZ has volunteered to call if Kenny is not available)
- Fridays will continue to be called by NC4MP
- And we need backups – JUST BECAUSE.

Please contact Richard Hall, K7RLH, if you are interested in calling one or more nets.

Public Service

Check the RARS web site often for Public Service opportunities.

BOARD OF DIRECTORS

President

Richard Hall--K7RLH

Vice President

Manny Garcia--KB4NC

Secretary

Andy McDaniel – KN4JJU

Treasurer

Christy Fernandini - KJ4AEO

Member-At-Large

Al Crawford –
WA4TCJ

Member-At-Large

Bernie Jones – N4BAJ

Member-At-Large

Mike Gaither –
K4MWG

Member-At-Large

Brian Knox--KK4BK

Membership Chair

Gary Plante--KO4LQX

Appointed Positions

NET MANAGER

Kenny Souther-KJ4CVK

Special Events Director

Gino Fernandini –KI4YXO

Public Service Director

David Krum – NW3U

SWARC Mission Statement

South Wake ARC's primary purpose is to further the Amateur Radio Service through programs, activities, and education, in order to promote the radio knowledge, fraternalism and individual operating efficiency of its members. Further, it shall be our purpose to support the welfare of our community through public service including radio communications for emergency situations and public events, and through providing information, training, and assistance to individuals or organizations with an interest in the Amateur Radio Service.

LINKS (if you have other links you want added then send them to me)

PRN

A Wide Area Digital Amateur Radio Network www.ncprn.net

GigaParts www.gigaparts.com

QRZ www.qrz.com

Ham Radio Outlet HRO www.hamradio.com

Raleigh Amateur Radio Society RARS www.rars.org

Johnson Amateur Radio Society JARS www.jars.net

South Wake Amateur Radio Club SWARC www.southwakearc.com

ATTENTION

Our club is like other clubs, we have a mixture of memberships. We have everything from young members to those who are “Advanced Agers”. The point is - make sure to check up on our older members occasionally to see if they could use any help. Someday you may be in their exact situation. Also, when you are advised by email or net contact that someone has a need or illness/loss/etc., reach out to them and give them encouragement and help with their needs if you can.

WHO HAVE YOU HELPED THIS MONTH?

ARRL News

AMSAT-NA Elects Officers, Discusses Ongoing and Future Satellite Projects

[AMSAT-NA](#) President Robert Bankston, KE4AL, told the 2021 AMSAT Dr. Tom Clark, K3IO, Memorial Space Symposium on October 30 that the organization is looking ahead to future satellite missions but will "go commercial" in order to keep enough satellites in space. Bankston, who was re-elected at a virtual Board meeting on October 29, said AMSAT is in solid financial position and donations are



"healthy." Bankston said membership numbers are holding strong, with more than 4,000 members in 76 countries, and that recent administrative modernization has reduced overhead costs by more than 30%.

Vice President-Development Frank Karnauskas, N1UW, noted that, despite AMSAT's solid financial standing, additional funds are needed to design, build, and launch satellites. Consequently, AMSAT is ramping up its grant-writing efforts, applying for grants

from philanthropic organizations and corporate sponsors.

Bankston said AMSAT's strategic plan prioritizes putting satellites into high-Earth orbits. He also summarized the GOLF (Greater Orbit, Larger Footprint) initiative as part of its plan to reach higher orbits. AMSAT will not be giving up on low-Earth satellites (FM CubeSats), however. "FM satellites are very important and can serve as a stepping stone to more sophisticated spacecraft," Bankston said. AO-91 and AO-92 are "living on borrowed time," so new initiatives are in order.



Bankston said purchasing commercial satellites can shorten the development time. AMSAT plans to purchase a v/U 1U FM CubeSat, powered by four lithium-ion cells, but the Board said 90% of funding would have to be obtained from external sources. This would not be a permanent approach, however.

Bankston said the organization will be seeking additional volunteers to put its plans into action. "Any expansion of the strategic plan will need more volunteers," Bankston said, adding that current volunteers "are pretty much at full bandwidth."



AMSAT Vice President-Engineering (and Board member) Jerry Buxton, N0JY.

Vice President-Engineering Jerry Buxton, N0JY, reviewed satellite projects in the pipeline. These include providing a linear transponder module to the University of Maine for its MESAT1, set to launch in 2022.

The GOLF-TEE (Technology Evaluation Environment) CubeSat is under construction and has been added to a launch manifest tentatively for summer of 2022. Supply chain issues are impacting construction. GOLF-1 is planned for delivery 1 year after the completion of GOLF-TEE.

Bankston mentioned new regulations that will govern satellite launches in the future. The Orbital Debris Assessment Regulations (ODAR) complicate the design and licensing of the GOLF 3U platforms,

however.

The 2021 AMSAT Dr. Tom Clark, K3IO, Memorial Space Symposium and Annual General Meeting [is available](#) on AMSAT's YouTube channel. Read [an expanded version](#).

December 2021 Issue of *QST* to Mail Mid-Month, Arrive Thanksgiving Week

Due to the widespread paper shortage and related supply chain issues, the December 2021 issue of *QST* will mail approximately one week later than usual, arriving in homes the week of November 22.

ARRL members can read the [digital edition](#) of the December issue now.



ARRL Podcasts Schedule



The latest episode of the On the Air podcast (Episode 23) features an in-depth discussion of Q-Signals, along with several on-the-air examples.

The latest edition of the Eclectic Tech podcast (Episode 46) features a discussion about Beverage antennas with Ward Silver, N0AX.

The On the Air and Eclectic Tech podcasts are sponsored by Icom. Both podcasts are available on iTunes (iOS) and Stitcher (Android) as well as on Blubrry -- [On the Air](#) | [Eclectic Tech](#).



October 2021 Volunteer Monitor Program Report

The Volunteer Monitor (VM) Program is a joint initiative between ARRL and the FCC to enhance compliance in the Amateur Radio Service.

- Technician-class operators in Yarmouth Port, Massachusetts, and Richmond, Texas, received *Advisory Notices* after making numerous FT8 contacts on 40 and 20 meters.

Technician-class licensees are not allowed to transmit data on 40 meters and have no operating authority on 20 meters.

- Operators in Mims, Florida; Moorefield, West Virginia; State Road, North Carolina, and Grottoes, Virginia, received *Advisory Notices* concerning excessive SSB bandwidth on 40 and 75 meters. The operator in Moorefield, West Virginia, previously received an *Advisory Notice* for out-of-band operation on 7.138 MHz. His case will be referred to the FCC for further enforcement action, which could include removal of voice privileges from, or revocation of, his General-class license.
- An operator in Cave Creek, Arizona, received an *Advisory Notice* for making lengthy transmissions without identifying, as required by Commission rules.
- An operator in Highlandville, Missouri, was reminded that a beacon on 30 meters cannot be automatically controlled, pursuant to 97.203(d) of the Commission's rules, and must have a control operator present at all times of transmission. He was further advised that the FCC may request a schedule of control operators and their duty hours.



The final totals for monitoring in September were 1,909 hours on HF frequencies and 2,716 hours on VHF frequencies and above, for a total of 4,625 hours.

There was one recommendation to the FCC for case closure and renewal of a license, and one request to review a license application. The FCC referred two cases to the VM Program. -- VM Program Administrator Riley Hollingsworth, K4ZDH

Space Physics Professor Seeks Radio Amateurs' Help in Making Space Physics Data Audible

Space Physicist Martin Archer of Imperial College London wants to know the best approach to making space physics data audible. Archer is the UKRI (UK Research and Innovation) Stephen Hawking Fellow in Space Physics and Public Engagement and is working in the fields of citizen science and data sonification. He is seeking individuals to complete [a survey](#), the results of which may help him to determine the best way to give space physics data a voice.



Space Physicist Martin Archer of Imperial College London.

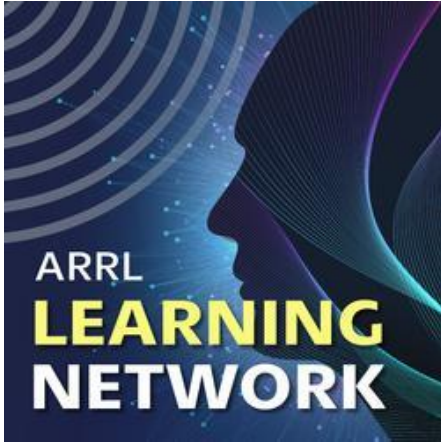
"Our sense of sound can be a powerful tool in exploring and analyzing data collected from satellites. But what is the best way to make this data audible?" Archer asks. Space science researchers at Imperial College London are asking for input from communities with relevant expertise -- such as those involved with audio, citizen science, music, public engagement, and science communication. HamSCI Founder Nathaniel Frissell, W2NAF, believes the list could also include radio amateurs.

"Given the connection between radio propagation and geomagnetic disturbances, along with the fact that hams are so used to listening to signals in noise, we think the amateur community would have valuable input," he said.

Specifically, the project seeks the best method of making ultra-low-frequency waves around Earth audible. Archer believes feedback from radio amateurs and others could help space scientists to improve science communication, public engagement, and citizen science.

Completing the survey should take no longer than 10 minutes. A [participant information sheet](#) offers greater detail. [Direct](#) questions should be sent to Archer via email.

ARRL Learning Network Webinars



Visit the [ARRL Learning Network](#) (a members-only benefit) to register, check on upcoming webinars, and to view previously recorded sessions. **More webinars coming soon!**

ARRL members may register for upcoming presentations and view previously recorded [Learning Network](#) webinars. ARRL-affiliated radio clubs may also use the recordings as presentations for club meetings, mentoring new and current hams, and discussing amateur radio topics.

The ARRL Learning Network schedule is subject to change.

Just Ahead in Radiosport

- November 18 - 19 -- Walk for the Bacon QRP Contest (CW, 13 WPM maximum)
- November 18 -- NAQCC CW Sprint
- **November 20 - 22 -- [ARRL November Sweepstakes](#) (phone)**

For more information, visit the [ARRL Contest Calendar](#).

Upcoming Section, State, and Division Conventions

Some conventions and hamfests may have been canceled or postponed due to the coronavirus pandemic. Check the [calendar of canceled events](#) on the ARRL website.

- October 15 - 17 -- [ARRL Pacific Division Convention](#) (Pacificon), San Ramon, California
- November 6 - 7 -- [ARRL Georgia State Convention](#) (Stone Mountain Hamfest), Lawrenceville, Georgia
- November 13 -- [ARRL Wisconsin State Convention](#) (Wisconsin ARES/RACES Conference) -- Online
- November 13 - 14 -- [ARRL Central Division Convention](#) (Fort Wayne Hamfest & Computer Expo), Fort Wayne, Indiana

Find conventions and hamfests [in your area](#)

Upcoming Contest(<https://www.contestcalendar.com/contestcal.html>)

Commemorating The Transatlantic Test's Centennial

Posted: 09 Nov 2021 01:26 PM PST

In the storied history of amateur radio, few dates are more significant than December 11-13, 1921. That's when members of the Radio Club of America (RCA) and the American Radio Relay League (ARRL) successfully transmitted Morse code signals that reached from Connecticut to Androssan, Scotland, on 230 meters (1.3 MHz), marking the first time amateur operators had spanned the Atlantic Ocean from the U.S. to Europe. The historic signals were also heard in England; Germany; Puerto Rico; Vancouver, BC; California; and the state of Washington.

Using a transmitter that had an input power of 990 watts and a T cage antenna (100 feet long and 70 feet high with a radial counterpoise), the Transatlantic Test Project proved that the average ham could reach great distances without the need for expensive setups, such as a Marconi wireless system. It fired the imagination of amateur radio inventors who have been experimenting with ways to improve wireless communications for the last century, leading to technologies that couldn't have been imagined by the amateurs sending dits and dahs from station 1BCG in Greenwich, CT—

a 10 foot x 14 foot wooden hut located in a farmer's field.

How You Can Honor These Ham Radio Pioneers

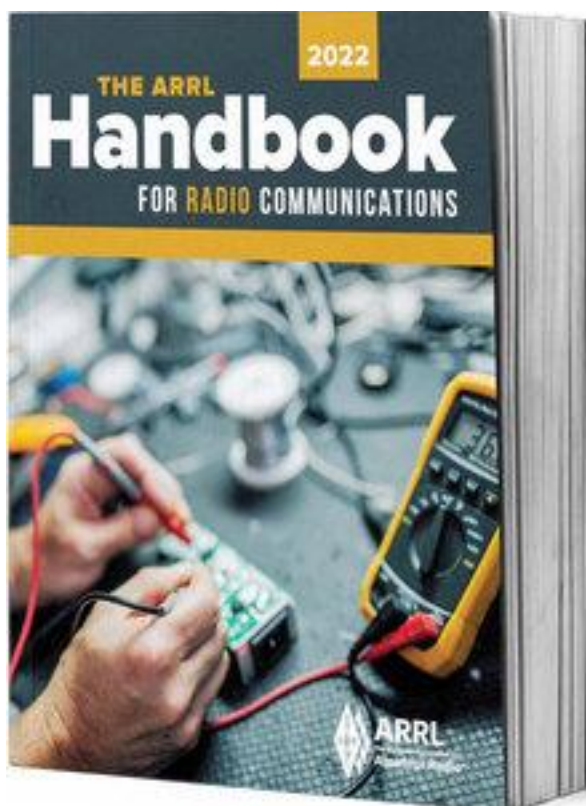
The Radio Club of America is celebrating the 100th anniversary of the Transatlantic Test by hosting a 16-hour CW and SSB QSO Party from 1200Z, November 13 to 0400Z, November 14. The event is open to both hams and shortwave listeners on 160, 80, 40, 20, 15, and 10 meters, with 10 bonus points awarded (per band and mode) for contacting Radio Club of America's station, W2RCA. You can find all the rules and more information about additional events commemorating the Transatlantic Test's centennial [here](#).

Tim Duffy, K3LR, DX Engineering CEO, discussed the event during his Facebook Live show. Click to watch the [video](#).

The post [Commemorating The Transatlantic Test's Centennial](#) appeared first on [OnAllBands](#), a service of DX Engineering.

The 2022 *ARRL Handbook for Radio Communications* is Now Available

The ARRL Handbook for Radio Communications for 2022 is a must-have for every radio amateur's bookshelf. Whether you're an experienced ham or new to the hobby, you'll find information you can



use to advance your amateur radio knowledge and skills. This current, comprehensive, and complete reference is available in three formats -- traditional [softcover](#), a six-volume, shrink-wrapped [book set](#) (box not included), and digital [eBook](#).

The 2022 edition features new projects and tools, including 3D printing techniques for ham radio construction, battery selection for portable operation, analog-to-digital converter overload, solid-state amplifier linearity, an update on Solar Cycle 25, and more.

The Handbook [six-volume book set](#), ARRL Item No. 1519, ISBN 978-1-62595-151-9, is \$59.95 retail. *The Handbook* [softcover book](#), ARRL Item No. 1502, ISBN 978-1-62595-150-2, is \$49.95 retail.

More new books have also just been stocked in the ARRL Store, including the second edition of *Grounding and Bonding for the Radio Amateur* by Ward Silver, N0AX. This new edition shows you how to make sure your station follows current standards for lightning protection and RF grounding. It details effective grounding and bonding techniques for the home, portable or mobile station, as well

as for towers and antennas.

Also just out: *More Arduino for Ham Radio* by popular author and experimenter Glen Popiel, KW5GP, introduces many of the new Arduino boards and add-on modules, followed by an overview of the software, tools, and techniques needed to bring projects to life. Practical projects showcase a wide variety of applications and include how the software sketches work.

[Grounding and Bonding for the Radio Amateur](#), ARRL Item No. 1496, ISBN 978-1-62595-149-6, is \$25.95 retail, special ARRL Member Price \$22.95.

[More Arduino for Ham Radio](#), ARRL Item No. 1472, ISBN 978-1-62595-147-2, is \$39.95 retail, special ARRL Member Price \$34.95.

Order from the [ARRL Store](#), from your [ARRL Dealer](#), or call (860) 594-0355 or toll-free in the US (888) 277-5289.

Announcements

- The RSGB reports the /2ZE suffix has been authorized to mark 100 years since wireless pioneers on both sides of the Atlantic, including Paul Godley, 2ZE, from the US, succeeded in copying a signal transmitted across the Atlantic and received in Scotland -- the "first successful reception of a personal message across the Atlantic by amateur radio" -- on December 12, 1921. ARRL dispatched Godley as part of the "Second Transatlantic Tests."
- VX3INSULIN will be on the air from Kingston, Ontario, during December to mark 100 years since a team at the University of Toronto discovered insulin in 1921. Operation will be mostly on FT8 and FT4. QSL to VE3NOO.
- An overview, "[The Enigma of Japanese Call Sign System](#)," by JG1VGX and revised by Ryota "Roy" Motobayashi, JJ1WTL, is available. For example, sequential call signs are based on the station address (the transmitter location) only, not mailing address or license class. Japan does not issue vanity call signs. Special event call



signs are available to organizations but not to individuals, and the Ministry of Internal Affairs and Communications issues such call signs. The same goes for special prefix call signs. Read the disclaimer at the end of the website.

- The London BBC Radio Group has been granted a year-long special event call sign, GB100BBC, to commemorate the centenary of the BBC in 2022. Operations will be carried out by individual members or groups from home stations or BBC premises.



QST

PUBLISHED IN THE INTERESTS OF POPULAR WIRELESS
BY THE AMERICAN RADIO RELAY LEAGUE, INC.

TRANSATLANTIC TESTS SUCCEED!

The Atlantic Ocean has been bridged by the signals of American amateur stations - not one but dozens of them! Paul F. Godley, sent overseas with American equipment by the ARRL, set up his station at Ardrossan, Scotland, and there copied the signals of the following stations:

SPARK

1ARY Burlington, Vt.	1BKA Glenbrook, Conn.
1AAW Illegal Station, not yet located	1XM Cambridge, Mass.
1BDT Atlantic, Mass.	1YK Worcester, Mass.
2BK Yonkers, N.Y.	2EH Riverhead, N.Y.
2DN Yonkers, N.Y.	2FD New York City
CAN. 3BP Newmarket, Ont.	2FP Brooklyn, N.Y.
	2ARY Brooklyn, N.Y.
	2AJW Babylon, N.Y.
	2BML Riverhead, N.Y.
	3DH Princeton, N.J.
	3FB Atlantic City, N.J.
	8BU Cleveland, Ohio.
	8ACF Washington, Pa.
	8XV Pittsburgh, Pa.

C.W.

1RU West Hartford, Conn.
1RZ Ridgefield Conn.
1ARY Burlington, Vt.
1BCG Greenwich, Conn.
1BDT Atlantic, Mass.
1BGF Hartford, Conn.

This accomplishment is epoch-making and opens the door to unguessed possibilities in private radio communication. We will publish the

COMPLETE STORY IN OUR NEXT ISSUE - DON'T MISS IT!

January 1922 20-Cents

QCWA and the 1921 Transatlantic Tests



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